

IN THE CLAIMS

1. (Presently Amended) A block copolymer characterized by the general formula $(AB)_n$ -Core, where A and B are polymeric blocks and Core is a non-polymeric linking core; wherein said block copolymer comprises at least one random block comprised of two or more monomers, wherein at least one of said two or more monomers is hydrophilic and at least one of said two or more monomers is hydrophobic such that an absolute difference in log p between said at least one hydrophobic and hydrophilic monomers is at least about 0.5; and n is 2 or more; wherein the polymer comprises at least one ~~monomer~~ unit selected from the group consisting of acrylic acid, methacrylic acid, N,N-dimethylacrylamide, dimethyl aminoethyl methacrylate, quaternized dimethylaminoethyl methacrylate, methacrylamide, (2-methoxyethyl)acrylate, N-t-butyl acrylamide, maleic acid, maleic anhydride and its half esters, crotonic acid, itaconic acid, acrylamide, acrylate alcohols, hydroxyethyl methacrylate, diallyldimethyl ammonium chloride, vinyl ethers, maleimides, vinyl pyridine, vinyl imidazole, other polar vinyl heterocyclics, styrene sulfonate, allyl alcohol, vinyl alcohol, vinyl acetate, salts of any acids and amines listed above, and mixtures thereof; and provided that said block copolymer is soluble or miscible in water, methanol, ethanol or isopropanol or any combination thereof at a concentration of at least about 20 mg/mL at room temperature.

2. (Original) The block copolymer of claim 1, wherein said random block is disposed between at least one of said A and B blocks.

3. (Original) The block copolymer of claim 1, wherein said linking core is a di-functional initiator-control agent adduct and n is 2, such that upon formation of said block copolymer there are two A blocks, one at each terminus end of said B block.

4. (Original) The block copolymer of claim 3, wherein said linking core is selected from the group consisting of 4-arm, 6-arm, 8-arm and 12-arm stars.

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5. (Previously Amended) The block copolymer of claim 1, wherein said linking core is selected from the group consisting of 4-arm, 6-arm, 8-arm and 12-arm moieties.

6. (Previously Amended) The block copolymer of claim 1, wherein a ratio of said two or more monomers in said random block is chosen such that an increase in the proportion of said at least one hydrophobic monomer results in a decrease in the solubility or dispersibility of the block copolymer in water, methanol, ethanol, isopropanol or a combination thereof.

7. (Previously Amended) The block copolymer of claim 1, wherein a ratio of said two or more monomers in said random block is chosen such that a decrease in the proportion of said at least one hydrophobic monomer results in an increase in the solubility or dispersibility of the block copolymer in water, methanol, ethanol, isopropanol or a combination thereof.

8. (Presently Amended) A block copolymer that is at least soluble or miscible in water at a concentration of at least about 20 mg/mL, comprising a polymer having at least the structure A-B-A, where A and B are polymeric blocks, and wherein said polymer comprises at least one random block comprised of two or more monomers, provided that at least one of said two or more monomers in said random block is hydrophilic and at least one of said two or more monomers is hydrophobic, wherein the absolute difference in log p between the hydrophobic and hydrophilic monomers is at least about 0.5; wherein the polymer comprises at least one ~~monomer~~ unit selected from the group consisting of acrylic acid, methacrylic acid, N,N-dimethylacrylamide, dimethyl aminoethyl methacrylate, quaternized dimethylaminoethyl methacrylate, methacrylamide, (2-methoxyethyl)acrylate, N-t-butyl acrylamide, maleic acid,

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maleic anhydride and its half esters, crotonic acid, itaconic acid, acrylamide, acrylate alcohols, hydroxyethyl methacrylate, diallyldimethyl ammonium chloride, vinyl ethers, maleimides, vinyl pyridine, vinyl imidazole, other polar vinyl heterocyclics, styrene sulfonate, allyl alcohol, vinyl alcohol, vinyl acetate, salts of any acids and amines listed above, and mixtures thereof.

9. (Original) The block copolymer of claim 8, wherein said random block is disposed between at least one of said A and B blocks.

10. (Original) The block copolymer of claim 8, wherein a ratio of said two or more monomers in said random block is chosen such that an increase in the proportion of said at least one hydrophobic monomer results in a decrease in the miscibility or dispersability of the block copolymer.

11. (Previously Amended) The block copolymer of claim 8, wherein a ratio of said two or more monomers in said random block is chosen such that an increase in the proportion of said at least one hydrophobic monomer results in a decrease in the hydrophilicity of the block copolymer.

12. (Previously Amended) The block copolymer of claim 8, wherein a ratio of said two or more monomers in said random block is chosen such that a decrease in the proportion of said at least one hydrophobic monomer results in an increase in the hydrophilicity of the block copolymer.

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13. (Original) The block copolymer of either claims 1 or 8, wherein said A block has a number average molecular weight that is within 20% of the number average molecular weight of said B block.

14. (Original) The block copolymer of either claims 1 or 8, wherein said A block has a number average molecular weight is less than 50% of the number average molecular weight of said B block.

15. (Original) The block copolymer of either claims 1 or 8, wherein block A has a glass transition temperature above at least about 22°C.

16. (Original) The block copolymer of either claims 1 or 8, wherein block B has a glass transition temperature below at least about 22°C.

Please cancel claims 17-22.

23. (Previously Added) A block copolymer characterized by the general formula $(AB)_n\text{-Core}$, where A and B are polymeric blocks and Core is a non-polymeric linking core; wherein said block copolymer comprises at least one random block comprised of two or more monomers, wherein at least one of said two or more monomers is hydrophilic and has a log p value less than or equal to 1, and at least one of said two or more monomers is hydrophobic, and has a log p value greater than or equal to 2, such that an absolute difference in log p between said at least one hydrophobic and hydrophilic monomers is at least about 1.0; and n is 2 or more; and provided that said block copolymer is soluble or miscible in water, methanol, ethanol or isopropanol or any combination thereof at a concentration of at least about 20 mg/mL at room temperature.

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24. (Presently Amended) The block copolymer of claim 203, wherein said B block is a polymeric block of (2-methoxyethyl)acrylate.
25. (Presently Amended) The block copolymer of claim 203, wherein the A block is a polymeric block of monomer selected from the group consisting of methyl methacrylate and N,N-dimethylacrylamide.
26. (Previously Added) A block copolymer characterized by the general formula $(AB)_n$ -Core, where A is a polymeric block and B is a polymeric block of (2-methoxyethyl)acrylate, and Core is a non-polymeric linking core; wherein said block copolymer comprises at least one random block comprised of two or more monomers, wherein at least one of said two or more monomers is hydrophilic, and at least one of said two or more monomers is hydrophobic, such that an absolute difference in log p between said at least one hydrophobic and hydrophilic monomers is at least about 0.5; and n is 2 or more; and provided that said block copolymer is soluble or miscible in water, methanol, ethanol or isopropanol or any combination thereof at a concentration of at least about 20 mg/mL at room temperature.
27. (Presently Amended) The block copolymer of claim 236, wherein the A block is a polymeric block of monomer selected from the group consisting of methyl methacrylate and N,N-dimethylacrylamide.
28. (Previously Added) A block copolymer that is at least soluble or miscible in water, methanol, ethanol or isopropanol or any combination thereof at a concentration of at least about

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20 mg/mL, comprising a polymer having at least the structure A-B-A, where A and B are polymeric blocks, and wherein said polymer comprises at least one random block comprised of two or more monomers, provided that at least one of said two or more monomers in said random block is hydrophilic and has a log p value less than or equal to 1, and at least one of said two or more monomers is hydrophobic and has a log p value greater than or equal to 2.

29. (Presently Amended) The block copolymer of claim 258, wherein said B block is a polymeric block of (2-methoxyethyl)acrylate.

30. (Presently Amended) The block copolymer of claim 258, wherein the A block is a polymeric block of monomer selected from the group consisting of methyl methacrylate and N,N-dimethylacrylamide.

31. (Previously Added) A block co-polymer that is at least partially soluble or miscible in water, methanol, ethanol or isopropanol or any combination thereof at a concentration of at least about 20 mg/mL, comprising a polymer having at least the structure A-B-A, where A is a polymeric block and B is a polymeric block of (2-methoxyethyl)acrylate, and wherein said polymer comprises at least one random block comprised of two or more monomers, provided that at least one of said two or more monomers in said random block is hydrophilic and at least one of said two or more monomers is hydrophobic, wherein the absolute difference in log p between said hydrophobic and hydrophilic monomers is at least about 0.5.

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32. (Presently Amended) The block copolymer of claim 31~~28~~, wherein the A block is a polymeric block of monomer selected from the group consisting of methyl methacrylate and N,N-dimethylacrylamide.